



Vulnerability of pejerrey *Odontesthes bonariensis* populations to climate change in pampean lakes of Argentina

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Abstract:

The vulnerability of the pejerrey *Odontesthes bonariensis* population in Lake Chasico was assessed under different climate change conditions. During the sampling period, the water temperature was adequate for fish reproduction and to sustain an adequate sex ratio. Climate-driven higher temperatures, however, may severely distort population structure and cause drastic reduction or local extinction of stocks. Lake Chasico can be classified as eutrophic with clear waters and cyanobacteria that regularly cause fish mortality were identified as *Nodularia spumigena* and *Oscillatoria* sp. Global warming may strengthen the effects of eutrophication (e.g. toxic blooms or anoxia). Since many Cyanophyta species tolerate higher temperatures better than other algae, toxic blooms could increase. Furthermore, cyanobacteria have low nutritional value and could decouple the low-diversity food web. Lake Chasico has currently the salinity optimum (c. 20) for the development of the early life-history stages of *O. bonariensis*. Climate change, however, is likely to amplify the intensity of droughts or inundations. Floods can endanger *O. bonariensis* development due to its sub-optimal growth at low salinity and droughts could increase lake salinity and also temperature and nutrient concentration. In order to reduce some of the effects of climate change on the *O. bonariensis* population in Lake Chasico, integrated basin management based on an eco-hydrological approach is proposed.

Source: <http://dx.doi.org/10.1111/j.1095-8649.2010.02750.x>

Resource Description

Communication: ☒

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☒

audience to whom the resource is directed

Policymaker

Exposure : ☒

weather or climate related pathway by which climate change affects health

Climate Change and Human Health Literature Portal

Food/Water Quality, Food/Water Security, Temperature

Food/Water Quality: Biotoxin/Algal Bloom

Food/Water Security: Fisheries

Geographic Feature: 

resource focuses on specific type of geography

Freshwater

Geographic Location: 

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Health Impact: 

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Intervention: 

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: 

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: 

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Population of Concern: A focus of content

Population of Concern: 

populations at particular risk or vulnerability to climate change impacts

Workers

Resource Type: 

format or standard characteristic of resource

Research Article

Timescale: 

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content